

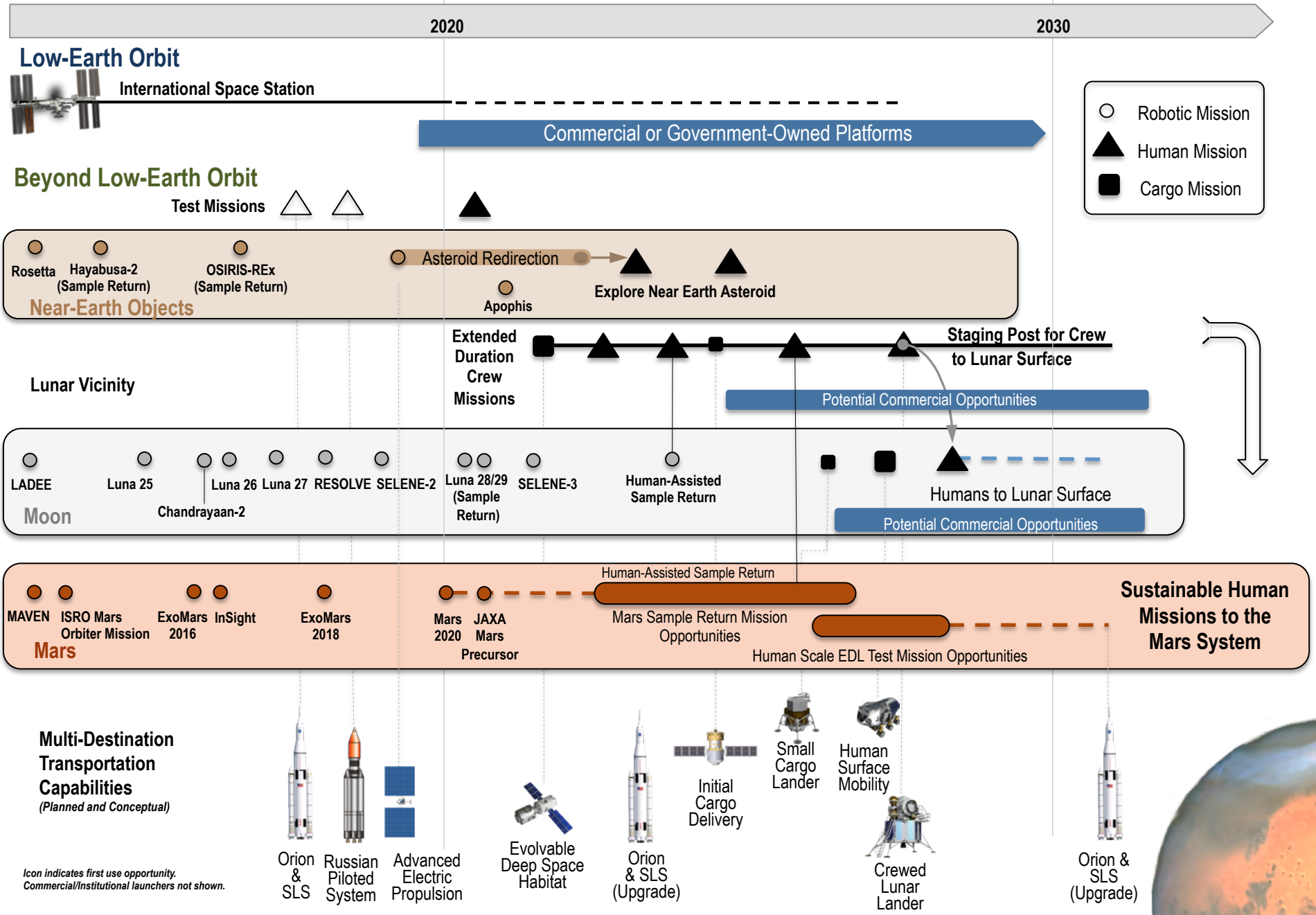


Ensuring GER near-term steps enable future Mars missions: The Proving Ground

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April 10, 2014

ISECG Mission Scenario



Mars Mission Risk Reduction



Proving Ground

<ul style="list-style-type: none"> ● Full utilization in relevant environment ● Sufficient risk reduction in relevant environment ⊙ Initial feasibility validation/partial validation 	Earth	ISS/Low-Earth Orbit	Lunar Vicinity (Earth-Moon Lagrange Point (EML), Moon Orbit)	Moon Surface	Mars Vicinity	Mars Surface (Robotic Mission)
Beyond Low-Earth Orbit Crew Transportation			●	●	●	
Heavy Lift Launch			⊙	●	●	
Reduced Supply Chain		⊙	●	●	●	
Autonomous Crew Operations	⊙	⊙	●	●	●	
Deep Space Staging Operations			●		●	
Mars Ascent	⊙			⊙		⊙
Space Radiation Protection/Shielding		⊙	●	●	●	
Life Support & Habitation Systems		●	●	●	●	
Entry, Descent, & Landing Systems	⊙			⊙		●
Surface Power and Energy Management	⊙			●		●
Surface Mobility	⊙			●		●
Human Robotic Integration	⊙	●	●	●	●	●
Mars In-Situ Resource Utilization	⊙			⊙		●
Long Duration Human Health	⊙	●	●	●	●	
Deep Space Operation Techniques	⊙	⊙	●		●	

Note: This table assumes critical capabilities will be provided by multiple agencies.